

CONFIDENTIAL

To: Marshall Smith
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cc: Irving Gould
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RE: CIL STRATEGIC PLAN 1985-1987

Attached is the memorandum on Commodore's strategic options and priorities over the next two years. Much of the material you will of course be familiar with as it has been raised in one form or another many times; most of it reflects the views of the senior CIL management as more or less formally expressed during my recent interviews with them; some of it is my own personal analysis, as corporate planner, of what is required. This first draft is a frank and direct expression of the issues. The focus is therefore precisely issues and solutions rather than masses of market data defining different market segments and CIL's fluctuating shares. After discussion, a revised and expanded version, including the background market data can be rapidly circulated to CIL management and Dillon Read for development as the document we present to the banks.

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Market Overview

Basic data on micro market by region (U.S., Europe, Rest of World), and by market (Business, education and consumer) with CIL market shares. Discussion of specific market conditions in U.S., U.K., Germany and CEL.

Competitive Analyses

Apple
Atari
IBM
Compaq
Amstrad

Strategic Issues

Of the many strategic issues confronting CIL, the following seem to be the most critical

1. Financing - arranging satisfactory long-term financing
 recapitalization of the company
2. Manufacturing - getting quality under control
 - getting a clearer fix between forecasting and
 inventory buildup
3. Product - Establishing an installed base of over 500K
 Amigas in 1986, probably through licensing
 - Bringing Ranger to market
 - Upgrading the C-64/128 product line
 - Set and initiate '87 product design objectives
4. Organizational - Establish CIL as a real corporate entity
 - Develop organizational support necessary to
 enter and service new markets and
 distribution channels.

Financing

This obviously hinges on a variety of issues currently under negotiation, and is not usefully discussed here. From Dillon Read's perspective, the core issues are:

1. Company sales projections through fiscal '86, and why our past forecasts vs. sales have been out of alignment for the last three Quarters, and why the future will be different.
2. A doomsday CIL sales projection (sales are 35% below forecast for December and March quarters). What are the specific steps management would take at each point, especially the speed with which it could and would react to a soft market.
3. CIL sales projections for the rest of calendar 1986, and overall market projections for 1987. (A subset of all this is manufacturing's ability to meet demand, and any specific capital expenditure that may be required. (test equipment, etc.)
4. Specific organizational and marketing responses CIL will take to grow its distribution and exploit its vertical market opportunities.

Manufacturing

The most frequently mentioned CIL organizational issue concerns establishing who is responsible for quality control. The way the system currently works, with different entities responsible for qualifying vendors, determining product specifications, buying components, and monitoring quality at the manufacturing and assembly level, verges on the chaotic. The various issues around the appropriate level and method of testing, and the issue of whether to bring Amiga production in-house are unresolved and hotly contested. Everyone seems in agreement that in the case of Amiga, quality control is more important than cost savings (although costs and prices should obviously be as competitive as possible).

There is also concern that decisions on the 1986 product line (including peripherals), on methods of testing, and on specific locations for manufacturing all have to be decided imminently, if fall 1986 is not to be a rerun of fall 1985 with product shortages and unacceptable failure rates (Europe especially).

Longer term issue of consolidation of worldwide manufacturing; role of subcontracting, etc.

PRODUCT PLANNING

Over the next few months, most of the Commodore's product development is simply cleaning up the existing product line and peripherals -- improved chips and cost reductions for all machines; QA on the Amiga system software and release of AmigaDos V1.2; final engineering on the IBM emulator and accelerator, the digitizer, genlock, midi interface, and modem. All of these are critical and are appropriate priorities. Until these are completed, however, there is only very limited development work going on for Ranger, no work on other important Amiga peripherals, and upgrade work on the PC10 and C-64/128 line is limited essentially to cost reductions. New product options on the PC 10 and C-64 lines are therefore limited to choosing between what is already in place (pulling a drive out of the PC 10, building the 128D, etc.) New configurations (e.g. built-in 3 1/2" drives) can only be achieved in a useful timeframe by selected addition of staffing.

C-64/128

There are obviously continuing questions about the long and even mid-term viability of this product line. Even after the recent international managers meeting, there is universal confusion over what we have decided to build, when it is likely to arrive, likely pricing, and disagreement about what product configurations are best for each market. These issues have to be resolved ASAP, and will presumably be so at the managers meeting next week. Without getting into product specifications here, there are four points that have to be kept in mind when making product configuration decisions for any machine -- Pricing, Performance, Ease-of-Use, and Utility or applications.

Pricing. Even without the Japanese entry, there is and will continue to be strong pressure on pricing. For CIL, this pricing pressure is a pincer, with Amstrad (Europe) and the Atari ST exerting pressure from below, and with Apple and Tandy exerting pressure from above. The 512K Mac is at \$1795 without peripheral purchases required, and is likely to stabilize around \$1500 when the open Mac is introduced. Apple's success in unbundling the IIe and mass market threat on the IIc mean continuing pressure here. Tandy's Comdex pricing for its Model 3000 AT clone is extremely aggressive -- at \$2599 for the entry system, it is 40% below IBM, and can only fall over '86. PC's Limited in Texas is offering an eight-slot AT, with 1024K, and 1.2 MB floppy for \$1995. Falling prices for the AT clones and the introduction of a 3 1/2" based PC2 will exert further closeout pressure on the regular PC clone market, which is starting to look ridiculously inventory heavy if you add up the likely product flow from the multitude of existing vendors.

At the consumer level, Amstrad is priced at least \$300 below similarly configured C128 systems, and rumored pricing on the ST line will attack both the 128 in mass, and the Amiga. It is highly unlikely that the Amstrad will make it into the U.S., and Atari's resources appear limited, but both could develop a real head of steam in '86. Summary: pricing pressure will remain extremely heavy on the entire CIL product line in 1986/7.

Performance. Performance pressures are also very heavy, especially for the C-64/128 line. The Amstrad and 520 ST are both superior performance machines, the Tandy 1000 is a real alternative for the serious buyer. The IIe can now be upgraded to 1 MB of RAM, and the II line has a slew of new high performance peripherals, including the new 800K, 3 1/2" Unidisk (all of which can be supported in the channel). ProDos, which is now standard issue, overcomes the limitations of AppleDos, is fast, and supports a hard disk among other features. Icon/window interfaces for the II are available, and Apple is likely to standardize on one of them soon. Development for fall 1986 includes the 16-bit version of the 6502, a kludgy solution at best, but one that can be marketed as the new generation. (See Apple).

In order of importance, the C-64/128 performance limitations are disk speed, disk capacity, memory, lack of Commodore brand high performance peripherals, and raw computing power. Current plans to go to a built-in 1571, 4 MH chip, and 128/256K of RAM are not a basis for extending the products life beyond 1986, given where competitive offerings will be.

Ease-of-Use. The C-64 has no system-defined user interface. This means that after typing "Load "*",8,1" the user is confronted with whatever screen format and interface the particular program uses. There is, therefore, no learning curve of a standard set of interface commands (as there is on the II, Mac, IBM or Amiga) which is very confusing, especially for the new user. The C-64/128 has the hardest user interface of any computer, including the IBM PC. Broader market penetration requires a standard user interface, preferably icon-based, to meet the new expectations of consumers who have seen these on all the competitive products except the Amstrad. (Even Tandy's Deskmate software, bundled with the Tandy 1000 uses windows and pull down menus.)

(Next week I will demonstrate GEOS, which as far as I know is the only Icon/window interface for the C-64/128. It uses a new disk-loaded DOS with a fastload (4 x 1541 speed), and offers desk accessories such as notepad, calculator, calendar, and more importantly, clipboard to easily move text and data between applications. Disk and file copy are simple icon operations, as is printer selection. Currently, if a C-64 user wants to copy a document rather than a whole disk, there is no support from DOS, and he has to write a Basic program to copy the document, unless the specific application supports file copy. CIL could replace the GEOS telecom program with our own revised C-64/128 communications package, for single key access to Q-Link.

GEOS will run all old C-64 programs, and can be operated using cursor keys, joystick or mouse. There are also icon-based paint and word processing programs -- the latter supports proportional fonts and could drive a laser printer. If the program tests satisfactorily, I propose we acquire the rights and bundle it with every C-64 and 128 in '86. This seems to me to be our best way of bringing the C-64/128 into the 1986 marketplace in terms of consumer ease-of-use expectations and to complement the new styling of the machine.

Utility/Applications. Apart from actually getting Jane 2.0 onto the shelves, there is not a whole lot left to do to provide additional utility for the C-64/128, at least in the short term. After improved disk speed and ease-of-use, however, new utility for the C-64/128 is obviously the most critical enhancement to drive sales. Some new applications may come out of increased memory, but not much, primarily because of C-64 user demographics rather than machine capability. The failure to date of the the C-128 software development program is indicative. Despite our rhetoric, C-64/128 programs do not and never will match the depth of quality of the Apple II line, a gap that is likely to widen rather than narrow. (Illustration: VIP, which is doing the Lotus 1-2-3 clone for the Amiga, ST, Mac and IIC is not planning a C-64/128 version, despite the five million installed base, because of the kind of buyer.) New software on the Amiga and ST and even 16-bit Apple II, will underscore C-64 program limitations.

The only way to significantly increase utility for the C-64/128, for its actual buyer base, in the near term, is telecommunications -- bundling the modem. This is not a viable option outside of North America. For the price of a piece of software, i.e. under \$30, you can add bulletin boards, software previews, public domain downloading, encyclopedias and news access, telegaming, teleshopping, telebanking, etc. These are not yet must-have applications, but will gradually become so, and become so precisely in ratio to the number of on-line subscribers. Q-Link is the best on-line service available, by far, for the C-64/128 kind of buyer, and it uniquely supports the Amiga's graphic strengths. Despite CIL's investment in Quantum, our support has been disastrous. Excluding 18K of VIC Modems from '84 inventory sold to Toys, CBM had only shipped 10K of modems by mid-November, and those without Q-Link software. In 1984, we shipped over 100K modems; in 1985 we will build and sell through less than 30K. (See QuantumLink).

PC 10 & 20

Whatever the chosen distribution channels and product configuration, the two issues facing the PC clone line are:

1. continuing price erosion as the PC continues its trend to a commodity
2. Threat of obsolescence. IBM has already discontinued production of the PC in favor of the XT without a hard disk. There is a strong trend to ATs, especially as price falls. As soon as current PC inventories are reduced, IBM is likely to introduce the 3 1/2" PC 2, meaning that only the clone makers are still in the PC business.

AMIGA/RANGER

As noted, Los Gatos is fully committed to just getting existing projects out the door. Ranger has to be CIL's new product priority in 1986 for several reasons:

1. Apple will come back with various Mac options, including open architecture, built-in Hard Disk, color at some point, a laptop Mac, and a line of 68020-based workstations, as well as a joint venture announcement to make the Mac an industry standard if they can pull it off. Also, if Atari introduces a 1 MByte, 800K drive system in January, Ranger and the new Mac have been flanked.
2. Corporate and most of the vertical markets need Ranger not Amiga, which was conceived and designed as a very powerful consumer machine, whatever its current business positioning.

Without Ranger, flexibility in Amiga positioning and pricing is limited; dealers have no step up; non-consumer markets do not have the machine they really need, and the chance of successfully concluding a joint venture to make the Amiga standard is much more limited. The chance of Ranger making the proposed October delivery, without a major push from Corporate, is less than 50/50.

The Amiga is designed as an open system. Obviously, over time, third party enhancements will appear. For machines of the Amiga class, very substantial and high margin peripheral sales are possible. As it currently stands, most of those system expansion dollars will be captured by TP developers.

A short list of Amiga product development options include:

1. A 6 card expansion box
2. A 20 MB 3 1/2" Hard Disk
3. IBM accelerator
4. 1 MB - 2 MB memory cards
5. Multifunction cards (Memory, RTC, with coprocessors)
6. 68020 and/or 68020/68881 card
7. Color digitizer card
8. Genlock card
9. IEEE card
10. 300/1200 modem card
11. 640/400 non-interlaced card
12. An AT plug in card
13. 8 plus voice sound chip

According to Future Computing, the average IBM PC has 2.9 cards at an average of \$225 per card; and Apple IIe owners have 2.2 cards valued at \$185. These are the AVERAGES, over the entire installed base. The Amiga offers unique card capabilities (RAM increases in increments up to 16 MB, the IBM accelerator, Genlock, the 68020, etc.) and the average card ratio could well be higher than the II or even PC. Cards are very cheap to make. It is a competitive market (at least one vendor plans to offer the 256K front expander on the Amiga in December for \$149) but as the vendor, CIL can claim the lion's share of the market, if the product is quality. Again, the vertical markets require these specialized boards or peripherals and CIL should probably market the expansion box itself, to assure compatibility with Ranger and early availability.

An average of 2.5 boards per Amiga at an average wholesale of \$150 = \$375 per machine in additional sales -- with relatively high margins and lower inventory risk because of ease in production ramp.

Apart from the peripheral market, the board market therefore offers CIL real profit opportunity -- if we have the product. In the case of Ranger, it is important to have at least some boards available, at launch, to make the additional power and slots of Ranger immediately useful to new purchasers.

At present, no work on any Amiga boards is underway at Los Gatos, and there is essentially no staffing to begin any until after Ranger, which is around June/July in terms of engineering. A preliminary discussion with Adam suggests the following staffing requirements:

1. IBM Accelerator/Emulation	2 people (to free Ranger engineers)
2. Genlock board	1
3. Digitizer	1
4. Hard Disk &	
5. Expansion Box	1
6. Multifunction card	1
7. 68020/68881	1
8. 640 x 400 non-interlaced	2
9. Apple Emulation	1
10. C-64 Emulation	1

To do Apple and C-64 emulations on the Amiga will take 6-9 months after staffing. It obviously allows us at that point to become the migration path for the two largest installed bases of consumer machines in the world. Since we do not have a long-term (i.e. 88+90) development program for the C64/128, it is essential that work begin immediately on both emulator programs, so that a plan that replaces the 64/128 line with the Amiga in '87 can be aggressively pursued. The difference between Apple's upgrade plan on the II line, and CIL's "migrate to Amiga" strategy has to be fully grasped and its consequences accepted -- by 1987, the Amiga has to take the place of the 128 and 128 LE, not only functionally, but in terms of compatibility, pricing, and volume -- with whatever that entails at that point in time for distribution.

The 68020 board is an important product because it addresses the needs of the scientific, engineering and military markets, CAD and high performance graphics in business, including interactive training/simulation. As a board product, it allows CIL to debug AmigaDOS in a 68020 environment without having to build the 68020 into the machine, facilitating that transition at any point in the future. The 68020, especially with 68881 and PMU makes the machine much more attractive to Unix users and almost guarantees a Unix implementation from TP's.

The 640 x 400 card (or upgraded chipset to go directly into Amiga and Ranger) is very important to get over the current interlace flicker problems. Without a 640 x 400 non-interlaced solution, it is difficult to enter the desktop publishing market, which is far and away the biggest potential of any Amiga vertical market. Current WP programs are low or medium res (640 x 200). (The trade and analyst community is already questioning whether the Amiga is really a "high-res" machine because of the flicker, so the monitor repositioning issue needs to be addressed ASAP). As an interim measure, we can use monochrome high res and long persistence color monitors, but these are unsatisfactory solutions. A 640 x 400 card, or on-board option therefore needs to be available soonest especially for the professional/vertical markets.

The other cards represent opportunities, not requirements. A quality, Ranger compatible box is necessary for the whole market to take off.

Once these products are in place, the Amiga product is in good shape to withstand competitive responses during '86. Without them, the Amiga will be running from behind all year, not able to sufficiently distinguish itself from the ST as a consumer machine or have the in-depth strength to take on the new Macs.

An alternative way to get the board products out is to work closely with selected TP's, and possibly to license their product. TP development is always a risk and leaves the product expertise outside the company -- but it does tap new creativity, additional resources, and in some cases is faster and cheaper, because no staffing and overhead commitments are necessary. But qualifying the TP vendors and driving the product again requires caliber staffing, whether drawn from internal or external sources.

Peripherals

As a final comment in this section, I would like to emphasize the role of peripherals in the Commodore product strategy. Because of the intensely competitive nature of the peripherals' business, some disastrous experiences with bad buys, and our current financial constraints, Commodore has been cutting back on its peripheral lines at a time when its three major competitors -- Apple, Tandy, and IBM -- have all been extending their peripheral lines. Apple offers four printers, and five monitors (separate mono and color for both IIe and IIC, and flat screen for both) plus three different drives (5 1/4", dual 5 1/4", and 3 1/2" Unidisk), etc. Tandy drew 14% of its fiscal '85 computer revenues from printers also. IBM has the largest line of printers of any PC manufacturer.

Obviously, one of the dynamics effecting this is that the specialty channel can support a diverse range of peripherals far more easily than K-Mart or Sears. Nevertheless, the reason other vendors are pushing peripherals is that they offer higher margins than the CPU's which are, at every level, becoming the razors, and because by emphasizing system sales, the peripherals go out the door with the CPU, which can still be advertised at a low price. A major reason for Apple's success with peripherals is superior industrial design. By doing striking designs for the ensemble products, it makes it much more difficult to buy someone else's vanilla monitor, etc. Also, Apple concentrates on custom design features that have real marketing impact. The two new color monitors for the IIe and IIC both have automatic software switchable modes to monochrome (actually green on green) when a text rather than graphic application is in use. TP vendors cannot customize their monitors too much, because they are really generic monitors, not Apple II, etc., monitors. It takes close scrutiny of costs and specific market potential (driven by marketing and engineering, rather than just Hong Kong) in selecting and buying peripherals, but peripherals (and in the case of Amiga, board products) represent an underutilized profit potential for CIL.

The Installed Base Issue and TP Licensing

The failure to establish the originally planned installed base of 150,000 Amigas in 1985 goes beyond its revenue impact. The Amiga's technical window has narrowed, while the installed base of all competitor machines, especially the II, Mac and MS-DOS, grew. Amiga is essentially being launched in 1986, albeit to a running start. The installed base of MSDOS machines in U.S. homes at the end of 1985 is between 1.1 and 1.3 million. With or without CIL's participation, the under \$1000 MSDOS market (boosted by portables probably including IBM's Clamshell) will increase the installed base to around 1.6-1.8 million in the U.S. by yearend '86. In Europe, especially Italy which has officially standardized on MSDOS for education, in Germany where at the college level MSDOS is the defacto standard, and in the U.K. where educators are looking to MSDOS after the BBC/Acorn debacle, the installed base of IBM clones is growing rapidly. The Mac has an installed base of around 600,000, with around 350,000-400,000 projected by analysts for '86, bringing the total close to one million. The II line will reach three million by yearend '85, with another 600,000 plus projected in '86.

If the Amiga is to gain a real foothold in the marketplace as opposed to being a niche market or classy consumer plaything, it has to make up the lost sales of 1985 in 1986. The market marches on in both technology and installed base, and the Amiga cannot simply shift its market window back a year without serious implications. The minimum sales target for the Amiga worldwide in 1986 has to be 500,000 units, and 650,000 plus in '87, with manufacturing and marketing strategies to match. CIL may well be profitable at lower numbers, but by yearend 1986, TP developers and users will swing behind the million plus and growing installed bases. Obviously, sales of 500,000 will require significantly expanded distribution to make the goal (even if we only claim 1400 etc. dealers).

The pricepoint of the Amiga currently limits big volume sales primarily to the U.S. (If the PC clone could only establish European sales of around 70,000 in calendar 1985, the Amiga is unlikely to do better than 50,000 to 60,000 in Europe in '86, given limited business software, Q2 introduction, etc.)

The lead time necessary to really penetrate the vertical markets, coupled with uncertainty about Ranger's introduction date, suggest that the core market for the Amiga in 1986, and the only one capable of delivering the necessary volumes, is the U.S. consumer market -- but probably not at present pricepoints.

Given the current state of the market and CIL's limited resources, I think it unlikely that CIL can force the necessary Amiga sales, and TP market support, by itself. Yet, unless CIL comes up with a program that delivers a minimum of 500,000 units in 1986, it seems to me quite likely that the Amiga will not make it into 1987 with the momentum it requires to succeed. If Apple pulls off a licensing venture with another manufacturer, CIL's task will become almost impossible, unless it can also tie up with another vendor for the Amiga.

A licensing/OEM agreement with someone like Tandy gives Amiga the status of a market "standard"; brings comfort to the TP community; allows diversification of product development (e.g. portable); and broadens distribution, making higher unit volumes and lower costs possible. I therefore strongly recommend that we aggressively pursue Amiga licensing to Tandy for their computer specialty stores. Other vendors such as Philips should also be pursued, although conflicting distribution channels become a problem, and decision times are likely to be too long to be useful.

Bottom Line: Given our weakened position, I'm not sure that we can pull Amiga off by ourselves; the most likely scenario to do so depends on making the Amiga a big volume consumer (and possibly college) machine in '86 at the \$1000 pricepoint, using Ranger to push into the vertical and business markets as these develop.

Amiga/Ranger Markets

The vertical markets for the Amiga are not doctors, lawyers, dentists, real estate, etc. The core VMs for the Amiga/Ranger are:

- * Desktop publishing including Corporate Graphics
- * Video special effects including animation
- * CAD at all levels including commercial design
- * Music and creative arts
- * Interactive training (using Laserdisk interface and Amiga speech)
- * Engineering and scientific (Europe)

All of these are substantial markets, but there are several severe obstacles in exploiting them in 1986:

- * Applications software and hardware interfaces are not in place
- * Most Amiga dealers are not trained to sell to these specialized markets
- * CIL does not have the infrastructure and programs in place to support vertical market sales

For the first half of '86, the best that can be done is supporting TP developers and pushing the Betasite program. At the product level, desktop publishing requires publishing programs, Postscript compatibility and Laser printer support, with special training, inventory and servicing required by the dealers. Music requires a ruggedized unit for the road, plus various peripherals (professional keyboards, professional MIDI interface), and again specialized dealer training, and connections to music stores for synthesizers, etc. CAD takes software, high res display, floating point coprocessors, and close knowledge of the end user. ETC. ETC.

In every case, the Amiga as a real solution to a problem will not be there until midyear at the earliest. Although there will be sales to all markets, they will for the most part be random and fortuitous. Ranger should be introduced just as the software and interfaces fall into place, enabling it to build rapidly on the Amiga's groundwork. Assuming of course that dealers are trained, and CIL has the marketing programs and support to drive these markets. Even then, the newness and uniqueness of the Amiga's VM's constitutes a major hurdle. In a February '85 Future Computing survey of 237 stores carrying VM software, not one of the Amiga's VM's software bases was identified. Since February, desktop publishing would probably make the charts, but at under the 10% of stores' level. Music, video, CAD and training may be big in 87/88, but it will be a long haul.

In a nutshell. Vertical markets are to the consumer market what specialty distribution is to mass distribution -- a much more complex, support intensive environment where many factors other than raw performance and pricing determine the sale. The total product/distribution/support infrastructure cannot be built overnight. CIL needs to staff appropriately for these markets, and actively drive product and programs for them; but, it should not depend on them to contribute to sales in a significant way in 1986. The only two clearly defined, bulk volume Amiga markets that CIL can depend on its ability to drive in 1986 are consumer and college education.

1986/1987 CIL Product Planning

The Amiga is a great product, and bringing to market the list of peripherals and boards noted above, along with the summer showing and fall introduction of Ranger will secure a minimally acceptable competitive position for the Amiga line. However, failure to introduce the Amiga in June 1985 as originally planned, and the loss of six months of its market led and installed base buildup, means that the product will soon be under substantial pressure as competitors upgrade their products and attempt to leapfrog the Amiga.

For example, if Atari actually introduces the 1040 ST in early January, it will flank by almost six months both the new open architecture, 1MB Mac and the 1MB Ranger in establishing 1MB as the new memory benchmark. Apple has licensed a sound sampling chipset with essentially twice the performance of Portia/Paula in the Amiga, and plans to use it and a MIDI interface for the the II, and Mac by the summer '86. GEM on the ST, Catalyst/Mouse Desk on the II, and IBM's support of Windows on the PC line mean that all major competitors are already using Mac/Amiga type interfaces. As far as raw computing power goes, Apple will introduce 68020 workstations and the 65816 Apple II in late '86; Atari/National Semi are still definitely working on the 32/32-bit TT graphics workstation; and Intel is already sampling the 80386, even as the 80286 AT's make their first appearances. The new chips and bankswitching is increasing the memory addressability of all PCs. By next fall, the only 8-bit machines still in the market will be the C-64/128 and the Tandy color computer.

Even the Amiga's strongest feature, graphics, is under pressure from new chips from Hitachi et al, and especially from the Take One Inc. video T-chip. (See below). In short, serious competition is emerging on all fronts, and the Amiga's lead is being pushed. The only defense is a rapidly growing installed base and further advances in the technology. CIL's engineering constraints in getting current product to market have already been noted. It must be stressed that in looking towards 1987, that there is no, repeat, no development work going on in Los Gatos regarding e.g. alternative display technologies and a portable Amiga; parallel processing and RISC architectures; or indeed any advanced work except Miner's chip designs, and those face special difficulties.

Software Products

Users, of course, buy solutions not hardware, and you know the Amiga's software record -- and not just because titles are late. There is no technical support worth the name for TP's, and no coherent software policy for the Amiga. What kind of titles are we pursuing for the Amiga label? Music? Education? Business graphics? Publishing? How many titles are we looking for? How are we deciding which ones to fund? What unique titles making use of the Amiga's features do we or should we have under development?

The CAD/graphics workstation market is Unix dominated. If Ranger is to be introduced for these markets next year, what is our policy towards Unix? (System V? Berkely 4.2? Microsoft Xernix? On Amiga? or Ranger? Or 68020 Ranger? For what applications and markets? Office Automation? Publishing? Multi-user or workstation? Most importantly, how can we drive it without funding it?

It is absolutely impossible to get a straight answer on any of this. (My own small contribution on Amiga priorities are a dbms; a superior desktop publishing program (VIP or Aldus, although the Mirror Group in London is apparently interested in doing one); a visual 1-2-3 type program for managers from X-Y-See, which is the best graphics-based productivity tool I have seen; and powerful, easy-to-use applications programs for the digitizer and genlock.) For the desktop publishing market, we should immediately license real typefonts (Times Roman, Helvetica, etc.) from Adobe for the Amiga (\$12,000 for choice of any 13 fonts) and begin a close relationship with them leading up to CIL licensing their Postscript screen interpreter around mid-1986 (for whatever we can negotiate under \$200,000). Why? For exactly the same reason that Apple bought 10% of the company and H-P, Xerox, et al, are stanardizing on Postscript. If CIL wants to be desktop publishing, it's the cost of entry.

Every month that we do not have the apporpriate caliber personnel identifying and driving core software, the Amiga loses critical momentum. (Sculley was recently quoted that since June he has personally met with 30 TP developers individually to encourage outside support for Apple.)

Graphics Competition

Steve Mayer, the president of Take One and the designer of the T-chip, was ex head of Warner Labs and co-designer, with Jay Miner at Atari, of the Atari VCS and 800 chipsets, and enjoys a similar industry reputation.

The reason the T-chip is important is that it uses a pixel address approach rather than the bit-plane approach of the Amiga chipset. Jay Miner himself has said, very confidentially, that the bit-plane approach is essentially a dead-end, and that if he had to do the Amiga chipset over, he would do a pixel address design. This means that although there are some obvious enhancements to the Amiga chipset, it cannot easily do what the next generation of graphics/video chips are required to do, especially for consumer and vertical market applications. A hybrid pixel address/bit plane chipset is apparently possible but difficult, and raises many complex issues of compatibility for existing Amiga software. (A report on these issues by Miner has unfortunately been delayed several weeks.)

The T-chip, which now exists as working silicon, was designed from the perspective of video manipulation rather than graphics generation. Take One intends to use the modular chipset to develop and market a highend (\$20,000 plus) video processing workstation. For all other applications, Take One is licensing

the chipset. Negotiations are underway with Bally, Nintendo, most of the major Japanese CD vendors, NEC which makes the chip under contract, Sun Microsystems, and (unspecified) other U.S. companies, probably Kodak, etc.

Apple had a letter of intent to buy a 20% share in Take One, with exclusive rights for certain markets. The agreement was driven by Jobs, and came unstuck with his departure, and the companies are currently in litigation, although new approaches have recently been made by Apple.

The features of the T-chip which make it attractive are 2048 X 2048 resolution, 4 million colors, built-in digitizer and genlock capabilities, as well as the ability to manipulate or "animate" very high res digitized images in real time. The T-chip was designed for video rather than computer applications, and is essentially complementary rather than directly competitive with the Amiga chips. Nevertheless, for certain applications, the T-chip is superior. A comparison of the Amiga and T-chips in a gaming or simulation application for example, would be the cockpit graphics of Arctic Fox or SkyFox by Electronic Arts. The best we can currently do is low res (because of high res flicker) computer graphics, which are prettier than our competitors', but nowhere near video quality. The T-chip by contrast, can digitize an image in high res (including much higher res than current monitors can support) which looks, in fact is, real video, and can manipulate it in real time, e.g. follow a video image of a plane against a video quality background, simply by using a joystick. The T-chips' resolution, and various features such as zoom, scaling, rotation, etc., can be powerfully exploited for applications such as CAD at all levels, desktop publishing, and even spreadsheets. The ability to scale and crop a full color, video quality image and drop it into a column in a publishing application is the next phase of that market's development. A full range of video special effects, including font driven titling, the built-in digitizing and genlock, etc., tie directly into the whole professional and home video market, to CD ROM's, etc. The T-chip is exactly what the Japanese want as a video chip in the MSX III machines, which if you look at MSX II, are focused entirely around the computer/video interface, with genlocks to VCRs and videodisks. The major thing going for us so far is the Japanese decision-making process, or they would have snapped it up already.

Without getting into an extended discussion of complementary and competitive features of the Amiga vs. T-chip, the key issue is that the Amiga chipset is under pressure. It does not have a logical internal growth path, and very considerable efforts will have to be expended to create the new chips necessary to get to the next generation Amiga.

The 640 x 400 non-interlaced upgrade of the Amiga chipset will not be available until late fall '86, although a partial upgrade may be possible in time for Ranger. Added feature and performance enhancements will appear in mid-87. Miner feels that the pixel address chipset, which is the direction all display technology is moving, and which is necessarily completely incompatible with Amiga, will take three years. (For all these chip designs, he will need additional staffing.)

The T-chipset will be running as a wirewrap board on the IBM AT in January '86 with production boards and software applications by June. It could be a board level product for the Amiga/Ranger by late fall of '86 if we choose to license it.

If we license it, we could also obviously incorporate it directly into Amiga/Ranger, significantly reducing lead time to get to the next generation products.

ORGANIZATIONAL ISSUES

In order to achieve its objectives over the next two years, CIL and its marketing companies need to make certain organizational changes.

1. Strengthen CIL as corporate leader. On my recent trip, there was a generally expressed consensus that CIL is an understaffed, shadow company that does not have a distinct identity from the marketing companies with sufficient resources to actively lead and direct them. Although the marketing companies like to have significant autonomy to respond to local conditions, there is also a strongly felt need that certain issues require much greater direction and control from corporate headquarters. These issues include:

- a. coordination of new product planning;
- b. coordination of market research/new product positioning;
- c. supervision of production goals, quotas and quality control;
- d. supervision of uniform pricing policies (Europe)
- e. cost budgeting and resource allocation. No one knows what the specific budget constraints are and how resource priorities are established -- staffing engineering vs genrad's purchases, etc.

2. Selective Staffing Additions. Although staffing cuts rather than additions are the order of the day in CIL's current circumstances, there are now several areas where the company does not have staffing resources to do the job. These include:

a. CIL Product Development. With the last round of engineering cuts, CIL/CBM/Amiga is now incapable of bringing to market the next generation of products on a timely basis. The tradeoff of staffing and new product availability is one-for-one, unless we do contract/cooperative work with TP's which is a real alternative, but needs to be decided yesterday. (See Product Planning). Apart from recent key engineering staffing losses due to resignations (a trend that will continue without a clear statement of company direction and much improved incentives) C-Amiga in particular does not have the resources to bring Ranger or the new Amiga peripherals to production in the proposed timeframes. C-128 and PC 10 development options are minimal given current staffing constraints. Although the Amiga is great, it will take continuous product enhancement to remain competitive over '86/87, especially with Apple spending \$110 million in R & D in 1986 alone, and new products coming onstream from IBM (at least the PC2) as well as from Atari, Tandy, and Amstrad.

b. CIL/CBM Market Development. CBM in particular does not have adequate, or in some cases any, staffing in key areas. These gaps are critical to the success or failure of the Amiga and PC clones in specific markets, and therefore to overall product momentum and success. These areas include:

- i. Education
- ii. OEM/VAR
- iii. Vertical Market/Beta site
- iv. Government
- v. Telecommunications

Without one and in some cases several high-level industry experienced appointments in some or all of these areas in the very near future, it is completely unrealistic to expect that the Amiga/Ranger (or PC 10) will be able to move beyond the consumer/small business market and achieve more than fringe penetration of the education, vertical and corporate markets. In addition to the direct appointments to drive market development, expanded technical support is required for these new markets, as well as the growing support requirements of third party developers, reps, dealers, and end-users.

Even with new staffing, as Apple has noted, these are long lead market development areas, and we cannot expect rewards until 1987. Once established, however, these markets offer more stable and diversified growth.

The same staffing gaps and support issues face most of the European and CEL marketing companies, although not as fully, especially in the case of Germany.

COMPETITIVE PROFILES

1. Apple
2. Atari
3. IBM
4. Compaq
5. Amstrad
6. Other

APPLE

Apple is in a transitional period. It sees itself as a "technology marketing" company, and the computer primarily as a personal productivity tool. Three times it has assaulted the office market (Apple III, Lisa, MacOffice) and three times it has failed. Both its core products, the II line and Macintosh, are being surpassed in the market by new price/performance benchmarks. Its recent organizational shakeup has left it weakened in engineering management, and its international presence is weaker than its competitors.

Nevertheless, Apple's strengths are very substantial, especially when pitted against Commodore and Tandy, rather than IBM. In a nutshell, these are:

- * \$350 million in cash at the end of fiscal '85 (Sept)
- * Fully automated on-shore manufacturing, capable of producing all current product, with defect rates below 2% on both product lines,
- * Strong image, especially among consumers, dealers, third party developers and educational institutions
- * Strong distribution network, which is being pruned to avoid the coming shakeout, and to strengthen Apple in core vertical markets, with a VAR program that netted 5% of Apple's sales in '85 and is targeted to contribute 10% plus in '86.
- * Strong internal technical and marketing support program for TP developers, especially software. (Each of five software categories -- education, business, education, entertainment, telecommunications -- has its own "Evangelist" support team, with a separate team for videotex/on-line services support)
- * Over 55% (and rising) of sales and installed base in U.S. educational markets, K-12 and college, with an experienced direct sales force in place
- * A much broader peripheral line than CIL, which its dealer channel can support (and which would continue to be a major beneficiary of aftermarket peripherals' sales even if the IIc itself were taken to mass).
- * Superb industrial design on its entire product line (e.g. new 1200 baud modem that plugs into wall, new slimline 3 1/2" Unidisk, IIc monitor, etc.) with superior documentation for all products
- * An Appletalk LAN (for all its limitations) and good internal expertise in telecommunications

- * A proprietary business information service, AppleLine, that runs on GE's Genie network
- * An increasingly coherent market strategy and product plan that, depending on implementation and timetable, will allow Apple to meet and possibly leapfrog its competition.
- * Months of prior discussions, and a much stronger position than CIL to successfully enter into substantial OEM or joint venture programs that would make the MAC a real alternative industry standard.

To take the last point first. Apple's product plans are as follows:

* II line. Push ProDOS (which overcomes 140K disk limitations of AppleDOS, is fast, and supports a hard disk), and Catalyst 3.0 (a MAC clone user interface that uses a hard disk). Support of Catalyst by TP's will stimulate user demand for a cheap II hard disk (to be announced by Apple in Q1 86). TP support for the Catalyst interface (featured in new Apple ads) and hard disk on the existing II's prepares the way for the 16-bit version of the II line that is currently being developed under competitive internal and external efforts for targeted late fall '86 introduction. There is as yet no definite information on whether the design effort includes a new video chip to improve the II's resolution to 640 x 400, but this seems highly likely. Apple has licensed a new sound sampling chipset from Ensoniq that has essentially twice the note capability of the Amiga, with double the frequency range (FM vs AM). The sound chipset will be built into the 16-bit mode of the II (and possibly the Mac) plus a MIDI interface. Since the early days with Herbie Hancock and Stevie Wonder, Apple has been a major factor in the music side of computing, and it intends to defend its leading position aggressively against threats from the Amiga and ST.

The Western Design chip is a kludge, and the resulting II machines will need an entirely new 16-bit software effort to make use of their expanded capability. This should not be too difficult, since the best TP developers for Apple have already indicated that they will do upgrades of their products for a 16-bit machine. Apple recently introduced an external 800K 3 1/2" Unidisk for the II line, and is apparently developing IIc with built-in 3 1/2"; and dual 3 1/2" drives for the IIE.

If Apple pulls this off, by fall 86 or Q1 87 at the latest, the II will have become a product that uses a Maclike interface; has 16-bit processing power, 8 voice sound with MIDI interface; (probably) increased screen resolution; high capacity 3 1/2" drives; is DOS compatible with all existing II software and peripherals, and supports/requires a hard disk -- all with Apple's standard product quality. The II is already expandable to 1MB of RAM, and will be further expandable. A 16-bit board product for

existing IIe owners is also being evaluated, to allow retrofitting the installed base. (TP Western Design boards are already available for the IIe. It is not clear exactly what the software implications of the 16-bit version of the 6502 are, and just how impressive the performance enhancements will be. Some engineers, including CIL's, argue that the overall performance improvements will not be that substantial.)

Apple, however, is making a major corporate commitment to this development effort, which it believes will enable it to keep the II a viable product line through 1990. By holding on to the II's huge software base, and the large array of TP boards and peripherals, Apple believes it will be in an unassailable position to dominate the consumer, K-12 education and small business markets with the II. (Apple's expanding domination of K-12, which is based on the depth of educational software, was evidently decisive in the choice of a "II upgrade" vs. "Migrate to Mac" strategy. Apple has announced a new networking system for schools, and expanded collaboration with textbook publishers for curriculum-based software on the II. The new II advertising campaign theme is "Buy the computer the whole family can use -- the one your child uses in school.")

Apple sees the C-64 as rapidly aging and being pushed ever further into an entry-level, consumer only market. The C-128 is seen as too little too late, no price threat, with limited peripherals support, distributed primarily through mail order. For the Amiga, lack of business software and an inadequate CBM marketing infrastructure make it unlikely that the Amiga can break out of its essentially hacker/consumer positioning in '86; and, at current pricepoints, it cannot build an installed base fast enough to challenge the two million plus base that the II and C-64 lines have. Under this scenario, the C-64/128 fade away by 1987, the Amiga is slow to crest, and anyway never establishes the base necessary to make it a real threat in education or small business. The II line in its 16-bit version therefore emerges as the natural inheritor of these markets, and the primary long-term competitive threat is seen as under \$1,000 MS-DOS systems. PC clones are a natural to dominate the small business and work-at-home consumer markets, and most of the European countries are standardizing on MSDOS for education. (Tandy has a major push on its T1000's in U.S. schools through its direct sales force, and Sculley has publicly stated that he expects a strong push from IBM in the educational market in 1986.)

* MAC. The Mac's problems are well documented, but since many of them were of Apple's own making under Jobs, they are rapidly being resolved. The Switcher program now allows users to rapidly move between programs, and the new Apple \$1500 20MB hard disk greatly improves the performance. Under active development are a range of Mac options. The closed 512K Mac will be kept as the entry-level product in the line, supplemented by an open architecture Mac, probably with 1MB; a built-in 20MB hard disk option; a laptop Mac ("flat Mac"); a color Mac and a 68020 line of Mac workstations, probably running Unix, targeted at the high end graphics markets, especially against SUN in the CAD market, and at the "3M" university workstation market (which is where Jobs is focusing his attention.) Most of these options will not be

introduced until summer '86 at the earliest, and some will not become market forces until 1987.

The software compatibility problems, especially for the color and 68020 Mac products, will be considerable. However, the very depth of the program, coupled with Apple's commitment to spend \$110 million in R&D in '86 mean that the entire line will generate synergies, and allow Apple to pursue its chosen vertical markets around IBM. The entire Mac product line is positioned for the corporate, vertical, college education, small business and productivity consumer markets. Ostensibly, the only areas of overlap with the II line are small business and high-end consumer. Convergence and "compatibility" between the II and Mac are a matter of overlapping pricing, a common user interface (Catalyst = Mac) and, down the line, the ability to read each other's data files on 3 1/2" diskettes. The ability to run each other's programs is not an effective option, and is in any event not considered necessary provided data files can be read.

Apple is aggressively recruiting engineering staff for both divisions, and just about every heavyweight in the field, including most Amiga staffing, has already been approached. For a range of specifically identified products -- file servers, LAN interfaces, data-comm bridges, gateways to host computer environments, etc. -- technical planning will be led by Apple, but implemented by TP developers for Apple licensing or independent sale.

The two vertical markets that Apple has publicly identified for the Mac are desktop publishing and telecommunications, where its experience with user interfaces could make a valuable contribution. In desktop publishing, Apple is far advanced with its market development. There are half a dozen publishing programs on the Mac; the Laserwriter is an expensive but superior product that is selling well; Apple's dealers and VARs have been pretty well educated on how to sell desktop publishing, and a major mailing from Sculley to the large publishing and in-house corporate publishing departments was made in early November. Apple also has a 10% investment (it tried to buy the company) in Adobe, which developed Postscript, a device independent language for publishing type applications that is rapidly becoming the industry standard. At Comdex, the Apple booth had several TP companies (e.g. Linotype) showing the Mac as the integrated front end of professional typesetting products. Apple's international sales meeting in November (which was open to TP developers) focused on marketing and marketing segments rather than product segments as previously. Apple's emphasis on the fact that target markets like desktop publishing require substantial investments in inventory (laser printers), parts, and support is clearly part of its strategy to differentiate and upgrade its dealer base without formally establishing new policies. As the open architecture Mac options become available, Apple will make a major push with the VARs, which have not had much to work with in the Apple line so far.

There are persistent rumors that, in addition to its active OEM recruitment efforts, Apple at Sculley's direction is aggressively pursuing a joint venture relationship with another major manufacturer. (Philips, NCR and Olivetti are the most frequently mentioned candidates) to establish the Mac as an alternative industry standard. Part of the \$110 million R&D funding is apparently targeted to customize/interface the Mac to the chosen host's mini/mainframe equipment. Apple is also planning to spend part of its R&D funds in licensing technology and making investments/acquisitions in key technology areas, e.g. flat screen, RISC architectures, etc.

The recently formed Government Sales Group and appointment of a government sales manager, and announced ruggedization of Apple products indicates a bigger push in this area.

In terms of revenues and profitability, Sculley has stated that fiscal 1986 should be level with fiscal 1985's \$1.92 billion, based on lower prices than in 1985, increased unit growth, and higher margins/profits.

COMPETITIVE PROFILESATARI

At Comdex, Atari emerged as a much more powerful and plausible market presence than most observers had expected. Although it is difficult to assess the actual substance (especially financial substance), behind Atari at the present time, the ST product and its market plan are impressive enough that until there is more evidence to the contrary, Atari should be considered a significant and potentially dangerous competitive threat in 1986. The recent appointment of Michael Katz (former VP of marketing at Coleco and CEO of Epyx Software) as Executive VP, and of Al Montross (former VP of marketing at Moore Business Systems) as US General Manager strengthen Atari's credibility. (Montross was apparently hired because of his familiarity with the specialty channel, to strengthen Atari's presence there.)

The ST product line is almost exactly a rerun of the C-64 approach to product development and marketing -- 70% of the desired features at 30% of the competitors pricing. It is far less ambitious than the Amiga, and will not get Atari out of the consumer/small business marketplace, but for its target markets it offers impressive value. The product is really targeted against the Macintosh rather than the Amiga, as it cannot challenge the Amiga's unique features (multitasking, animation, etc.). Although the ST does not have the Amiga's breadth of features, it does have real strengths. These include:

1. Real 640 x 400 resolution. The monochrome mode of the ST is higher resolution than the Macintosh (512 x 342) and therefore looks crisp and clean on a larger screen (13" vs. the Mac's 9"). It is much better than the Amiga's current 640 x 400 non-interlaced mode on the 1080 monitor, especially for text display and publishing programs.

2. Speed. The ST 68000 runs at 8 MH (vs 7.1 MH for Amiga, and 7.8 for Macintosh), it has faster disk access than both the Mac and Amiga, and it has a DMA port to support a high speed hard disk (a 5 1/4" 20MB priced at between \$699 and \$799). The DMA port can support other peripherals. The ST's sound chip is better than the Mac, not as good as the Amiga, but MIDI is built in.

3. Ease of Use. The ST uses the GEM icon/windowing/pull down menus interface. Polished interface, crisp display, with desk accessories - no multitasking.

4. Software. Has broader than expected software base, although not quite as good yet as Amiga. Looks close to shipping around 20 plus titles by mid-December, including Lotus 1-2-3 clone (already shipping), several databases, and publishing programs with significant development nearing completion in the U.K. An additional advantage of using the DRI (TOS) operating system is that the ST can read standard format IBM PC 5 1/4" drives in native mode, so that e.g. Wordstar or Lotus clone programs on the ST can read data directly from a 5 1/4" disk and users can move easily between home and office. (The Amiga can read 5 1/4" disks in IBM emulation mode, but will not be able to do so in native mode before Q2, 1986. The advantage of native mode is faster performance.)

5. Pricing. Cost of the current machine is reported to be around \$224, plus \$50-\$60 for the disk drive plus \$80 for the monitor = \$360 for the system. Strategy is apparently to introduce a 1040 ST in early January with 1 MB of memory, and 1 MB disk drive plus monitor for \$995; This will be the computer store challenge to Amiga/Mac. There is also discussion of possibly taking the 260 ST (actually a 520 ST that is softloaded from disk leaving around 256K) with built-in 400K 3 1/2" drive into mass at around \$499 plus RF modulator, or \$599 plus monitor. If these pricing targets can be met, the ST line will become a real competitive threat, assuming that it can get mass distribution, which seems likely.

6. Distribution. Clearly Atari's weak point at the current time, with real questions about the strength of Atari's "specialty" distribution, and its ability to have essentially two versions of the same machine in two different distribution channels. Is expecting strong demand by consumers attracted by the pricepoint to expand shelfspace, with rapid buildup of volume at low margins to establish installed base and attract TP developers and dealers. Expects to have shipped around 75,000 plus units by year-end '85; must clear inventory to introduce 1040 and new 260 ST in January. Non-U.S. distribution weak except in U.K. and Germany.

7. Advertising. Current campaign limited to regional ads. New coop campaign pays 80% of all advertising before December 10, 1985, with proof of ads. Offering 4 or 5 Beta versions of software as free programs to dealers/consumers.

AMSTRAD

Amstrad is a difficult competitor to evaluate. A consumer electronics company that entered the computer market opportunistically, it enjoyed great success, but is wary of becoming too dependent on computers. It is not a presence in the U.S. and is unlikely to become one. In Europe, however, it has taken over from Sinclair as the driving force at the low end, and at current growth will be number one overall in Europe by mid 1986. The Korean-built Amstrad product is all built under subcontract and reportedly has a less than 1% failure rate in the field. The strategy is completely one of price, with the added wrinkle that it is price for a system, not just a CPU. The price performance differential is so great, however, that even with non-standard media (e.g. 3" drives) Amstrad is rapidly gaining market share. Commodore U.K. felt that with the current product pricing differentials, Amstrad would probably achieve the number one market share slot (35% in '85; 50%-60% in '86) displacing Commodore's apparently rightful role as U.K. market leader. (Sinclair and Acorn under Olivetti seem to be declining in all markets, and each retain only a 10% residual share in the U.K.)

The pricing differential (which is about 10% - 15% less dramatic on the Continent and Australia) is substantial -- similarly configured 128K Amstrad systems are about half the price of the C128 system, and, as noted, are much more reliable, with a neater product footprint. Even the computer magazines note that one can buy an Amstrad system and a C-64 plus cassette drive for the price of a C-128 system. (Amstrad CPU, drive, color monitor = L 399 vs C-128, drive, color monitor = L 767). Commodore U.K. feels that its competitive position against Amstrad, and to a lesser extent the Atari 520ST, is untenable, and that it can only continue to lose market share until Commodore product/pricing shifts.

The U.K. already has the highest per household installed base in the world, and it is not clear what growth is left in the market in the short term.

Germany appears less concerned about Amstrad, possibly because the collapse of other competitors has not yet made Amstrad's growth dependent on Commodore losing market share. In any event, Amstrad has a 30% share (in dollar value) and growing in Germany.

Amstrad does not have a technology base, and does not have a clear upgrade product strategy. It could, however, license e.g. an MSDOS machine from a Korean vendor.

IBM

After the closeout of the PCjr, IBM does not currently appear a major threat to CIL's markets, the JX notwithstanding. IBM's overhead structure prevents it from really entering the commodity marketplace, and other clone manufacturers such as Tandy, Tandon, Olivetti and ACT appear to be more serious competition, especially in the European marketplace. The most obvious potential threat to CIL is the PC2, currently rumored as a 80286, 3 1/2"-based machine with 256K, built in EGA graphics, and priced at between \$2000 and \$2500 including monitor. March is the favored introduction date. IBM appears to be abandoning Topview and GEM in favor of Windows, and supporting Microsoft in encouraging TP developers to write under Windows, which will make the PC2 (and the rest of the PC line) much easier to use. For the rest, the most important issues are the size of IBM's PC inventory, its growing interest in the graphics market and desktop publishing, and its view that the economy's downturn will markedly slow growth compared to previous years.

The clone market as a whole, and especially Tandy's T1000, do represent an increasingly competitive threat to both Amiga and any high end C-128, especially with an installed base of PCs, PCjrs, Compaqs, T1000's, etc., well over the 1 million mark in U.S. homes by yearend '85. At present, no one except Tandy, appears to be targeting mass distribution of the PC in the U.S. or elsewhere.

APPENDIX

VERTICAL MARKET DEVELOPMENT PROGRAM

The success of the Amiga (and Ranger) in 1986 is critically dependent on the early and rapid development of those vertical markets (VMs) that can benefit most from the Amiga's unique features. Rapid VM development will require an aggressive and concerted effort on Commodore's part to identify, prioritize, seed and administer a program that involves the leading companies in each target market. The program has to be driven in each country and administered in a flexible way to respond to quickly shifting windows of opportunity. Specific programs will vary widely from country to country depending on local conditions and contacts. Because the Amiga has been launched first in the U.S., the following analysis focuses on U.S. specifics, but is applicable in its general approach to all CIL markets.

Given Commodore's financial and production constraints in the U.S., the centerpiece of the VM initiative will be an AMIGA sales program disguised as a loaner program. The program is barebones as it stands. (The market reality is that competitors do extensive development seeding with low or no cost machines, and strong technical support). OBVIOUSLY WHEREVER CBM CAN MAKE IMMEDIATE SALES RATHER THAN LOANERS, IT WILL DO SO. However, the loaner program is intended to get the machines into key companies NOW, not when their decision-making or budget review process finally approves purchase. The purpose of the VM program is to forcefeed market experimentation with the Amiga, generating early acceptance and sales in new markets. In many cases, just getting the target company to agree to be a Beta site and to committing resources (typically amongst its best people) to evaluating the Amiga, will be a major achievement.

Terms of the loaner program will vary according to the importance and size of the specific company and industry segment, but in general the program will be 60 - 120 days net at developer system pricing. If the company or institution returns the unit before the end of the sale period, the unit will be treated as a loaner, and recycled to other sites, with no financial obligation to the original user.

There are four major GOALS for the VM program:

- * Seeding core R & D projects that will result in software and hardware applications that uniquely or effectively use the Amiga's capabilities.
- * Promoting diffusion of Amiga's in targeted markets through the implicit or explicit endorsement of the opinion leading companies in each field.
- * Identifying Amiga product problems (system and application bugs, program deficiencies, interface problems, etc.) i.e. classic Beta site benefits.
- * Maximizing the PR potential of the VM program through Commodore driven publicity using coordinated press releases, AmigaWorld, company interviews, co-marketing proposals, etc.

Other benefits of the VM program will include access to outside technical know-how, synergism across projects, improved product support for dealers and VAR/VADs, etc. Staffing requirements for the VM program are discussed under Organizational Issues.

In the U.S., four major components of the VM program are as follows:

1) R&D Seeding. Program targets leading computer research schools, especially those strong in graphics, music, speech synthesis and AI. The first round targeted "A" schools are:

- *MIT
- *Harvard
- *Carnegie Mellon
- *Stanford
- *UC Berkeley
- *UCLA
- *Columbia
- *Berkeley School of Music/Julliard
- *NY School of Visual Arts
- *Bank Street College

Each of these schools is selected for a specific reason. The second round of colleges will include Chicago, Pennsylvania, Texas, etc.

Each of the "A" list schools has many departments that will push for the Amigas. Within each school, therefore, the list will be carefully administered to reach our target departments, and those we expect to exercise the greatest diffusion leadership. MIT's program, for example, will loan machines to the Architectural Machine facility, the Operations Research Lab, Minsky (AI) and Papert (Logo). Ditto careful breakdown for each of the other schools.

The R & D program is 4-6 Amigas per school, provided as sales with 120 days net terms, and standard educational prices, i.e. 10% discount on dealer prices. If the units are returned before the four months are up, they will be treated as loaners, with no financial obligation to the schools. (It is highly unlikely that the units will be returned.)

2. VAR/VADs. Critical for reaching and supporting certain vertical markets and GSA Government bids. VARs are often extremely difficult to qualify and recruit. The CBM VM team would work with the regional reps to identify VARs who are significant vendors in target VMs, and then assist them by providing (under non-disclosure where appropriate) more detailed information on Commodore's product plans, other third party products under development, and generally acting as an information clearing house for the reps and VARs. The initial VAR/VAD program is as follows:

1-6 machines	-	\$
7 or more machines	-	\$

Terms - 30 days net

3. OEM/GOVERNMENT. There are a number of potential OEM markets (music, CAD, video special effects, desktop publishing, etc.). Some OEM opportunities will involve international companies or marketing proposals; others will be for very narrow domestic markets. Some will involve casing, packaging and distribution channel changes; others will look a lot more like VAR proposals.

It is vital that a consistent OEM policy be established that flows from CIL's overall strategic priorities, and not just CBM's or the individual European companies' opportunities. In general, sales would handle most of the contract negotiations. The role of the VM program would be to identify and help pursue the most important potential OEM vendors. VAR, OEM, and Government business usually requires high-level negotiations and long lead times.

4. Vertical Markets and Beta Sites. These represent the most diverse list of target companies, and terms will generally vary across a 30 to 120 day period, depending on the nature and importance of the company. This is the largest list, and since it will be impossible to service all these companies equally, it is the place where the most flexible and rapid decision-making is required. The main list is as follows:

Proposed VM & Beta Sites in the U.S. (Preliminary)

- Ø Desktop Publishing: Adobe; Compugraphics, Imagen, Technologic, Personal Publishing.
- Ø Video Special Effects: MAGI; Robert Abel Associates/Abel Image; Digital Video; Silvey Lee; Charlex; etc.
- Ø Architecture/Design Firms: I.M. Pei; Phillip Johnson; Halston; Balkind Associates; etc.
- Ø Ad Agencies: Ally & Gargano (Barry Vetere); Abel Associates (Bob Abel); J. Walter Thompson, etc.
- Ø Music: Jan Hammer (Miami Vice); Suzanne Ciani; Stevie Wonder; Scott & Boddicker (already in program); Herbie Hancock, etc.
- Ø Artists: Allen Norton; Al Barr; Yoichiro Kawaguchi, Andy Warhol, etc.
- Ø Animation Houses: Hannah Barbara; Disney; Don Bluth; Richard Bakshi.
- Ø Interactive Training: Video Systems; Interactive Training Systems.
- Ø Corporate Graphics Departments: Hancock; GM; Amex, etc.
- Ø Hardware/Software Companies: Warner; CBS; Wozniak; Kodak; Polaroid; Philips; JVC; Sony; Okidata; Benson; Tektronix; Colorocs; etc. (Vendors in the CD ROM, laser disk, and color hardcopy arenas.)

Product Requirements

Minimal product requirements for the VM program are as follows:

1. R & D	10 Schools/average 5 units	=55 units
2. VAR/VADs		=10 units
3. OEM		=10 units
4. VMs/Beta sites		<u>=75 units</u>
TOTAL		<u>150 units</u>

Since the point of the program is to get the units into the field, it is intended that all 150 Amigas be placed by the end of Q1, 1986. A good run rate is probably 50 units in December, 75 units in January, 25 units in February. At the end of Q1, an evaluation of the program's needs for the next six months will be undertaken.

The Amiga system used in the loaner program will be a 512K Amiga with monitor, second disk drive, and where appropriate 5 1/4" drive and IBM emulator/accelerator, plus available Commodore software and documentation. Wherever appropriate, Commodore will coordinate TP developers to work with and support the VM program with software, product (Hi-res monitors, color printers, etc.) and technical support.

Training and Technical Support.

Especially in the case of the VM/Beta site locations, Commodore will frequently have to provide initial installation and hands-on training. For many of the sites, support will include custom cabling for special interfaces, writing or helping to write drivers, providing timely updates of prerelease software, etc. Since these are by definition key potential customers, Commodore has to be willing and able to support a significant portion of these customers directly, or develop a program of rep/dealer support in the field. At least 3-4 technical support personnel from CBM will be required by the VM program.

Follow up: As soon as enough experience with a particular Beta-site and vertical market application is developed, a half-day or one-day traveling road show (perhaps using video) for the reps should be put together. This would allow a direct mail invitation only, etc., program, say for ad agencies and designers where Beta users can discuss their experience with the Amiga and how it improved performance in their field.

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